

URP 6905 section 2B24

2015 Fall Course Objective & Program:

The objective of this course is to teach students a variety of methods and techniques to interactively model and visualize physical urban environments in two, three and four dimensions through a hands-on approach using computer software. Students will acquire the skills to rapidly construct 3D models of urban settings in order to conduct analysis, generate conceptual plans and designs, and prepare high-quality renderings and presentations. The primary objective of the course aims to prepare students to be more effective in graphically communicating concepts and ideas pertaining to the planning and design of cities.

The course will be divided into two parts: (1) general instruction of methods and techniques for developing the skills to create high-quality 3-dimensional models and presentations, and (2) a final project. The first part of the semester will engage students in a hands-on approach to physical design by developing a broad range of technical skills using a variety of software packages including, ESRI ArcGIS and SketchUp.

The skills acquired during this portion of the semester will then be utilized in a final project, whereby students will be required to propose an intervention strategy for redeveloping an urban setting and apply/extend the acquired skills.

Topical Outline:

3D Modeling Fundamentals

- General 3D modeling behavior, techniques, and vocabulary
- Developing the 3D mindset within the 2D modeling realm
- Building 3D models for urban design applications
- Visualization using orthographic and perspective projections
- Model organization and optimization (3D layering systems)
- 3D libraries and components
- Materials application and texture mapping
- (Re)formatting digital imagery
- Perspective correction, cropping, cleaning, masking, and scaling digital imagery
- Applying design styles to enhance visualization of 3D models
- Basic model walkthroughs, flyovers, and animations

3D Modeling in GIS

- Creating and editing GIS data layers
- Data storage using a file geodatabase
- Creating 3D features (symbols) for use in ArcGIS
- Data exchange between SketchUp and ArcGIS
- Applying 3D symbology and annotations in ArcGIS

Model Integration, Analysis and Visualization

- Conceptual modeling, massing, and volume generation
- Building & Visualizing 3D models with Google Earth & Building Maker
- Simulating urban settings using site characterization techniques
- Developing high-resolution photorealistic renderings
- Creating and delivering high-quality presentations

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Course Information:

Instructor:	Ilir Bejlari, Ph.D, Associate Professor; ilir@ufl.edu , 392-0997ext.432; ARCH #454 Office hours: Friday 11.30am-1:00pm or by appointment
Assistant:	Zongni Gu; gznleo@ufl.edu Office hours: TBD
Class meeting times:	Friday 8:30am to 11:30am (period 2-4)
Classroom:	ARCH 439
Credits:	Three credits
Prerequisites:	URP6270 or with Instructor's permission (GIS knowledge preferred, not required)
Attendance:	Mandatory, on time (see <i>Expectations, Evaluation, and Grading section</i>)
Field visits:	Mandatory (Some assignments and the final project will require travel)
References & Resources:	See <i>References & Resources</i> section for text references and web, computer, & software resources
Course format:	All material will be posted on e-Learning system. System entry & support can be accessed at: https://lss.at.ufl.edu/ .

Expectations, Evaluation, & Grading:

The assignments and the final project will be graded based on the pertinence, content, and creativity of the student's work and evidence supporting the successful completion of assigned tasks. Submitted assignments are required to meet scheduled deadlines and delivery dates. Evaluation and grading for the class will be as follows:

Attendance:

Class attendance is mandatory and should be respected. If it is imperative that if you miss class for any reason, please make arrangements with the instructor to be excused prior to the class period. Two or more unexcused absences will result in a reduction of one grade point off the final grade. While in class, participation is required. Participation includes playing an active role during lectures and class discussions, and displaying equal engagement with team members during collaborative assignments.

Assignments (65%):

Assignments serve as building blocks for the development of high-quality models. A masterful understanding of the concepts, skills, and knowledge of these assignments will successfully contribute to your ability to produce successful plans, designs, and presentations. Evaluation and grading of assignments will include clear identification and presence of all required modeling elements, development and depth of techniques used throughout the modeling task, and level of creativity utilized in the modeling task.

Late Submissions: For assignments submitted late there will be a 10 points deduction for each day during the first three days after the due date. The assignments will not be accepted four days late and a grade of 0(zero) will be issued.

Final Project (35%):

The final design project will transpire over the course of approximately eight weeks, whereby teams of students will chose a project area (approved by the instructor), and propose a redevelopment strategy using

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the skills and knowledge garnered throughout the course of the semester. Students will generate an intervention strategy by building a working 3D model. The modeling strategies developed during the final project phase will be evaluated and graded based on the willingness to conduct effective and meaningful research, sound exploration of design options and alternatives, development and depth of visualization methods and techniques, the capacity to work individually and collaborate within a team, as well as the complexity, creativity, and depth of your final designs, and execution of the final presentation.

University of Florida grading scale

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	WF	I	NG	S-U
% Range	>93	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	<60				
Grade Point	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	.67	0	0	0	0	0

Non-Punitive Grades (not counted in GPA)

- W Withdrew
- U Unsatisfactory
- H Deferred
- N No grade reported
- I Incomplete

Failing Grades (counted in GPA)

- E Failure
- WF Withdrew failing
- NG No grade reported
- I Incomplete

Academic Honesty

Student Honor Code and Academic Honesty: Students must follow the University's policy regarding cheating and the use of copyrighted materials. Please consult the graduate catalog or visit <http://www.dso.ufl.edu/stg/> for more information.

Disabilities

Accommodation for students with disabilities: Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who much then provide this documentation to the Instructor when requesting accommodation.

College of Design, Construction and Planning – Spray Painting Policy:

Spray painting, or the use of any other sort of aerosol spray, is not allowed in the Architecture Building, Rinker Hall and in Fine Arts C, except within the spray booth found in Room 211 of Fine Arts C. Students found in violation of this policy will be referred to the Dean of Students for disciplinary action.

References & Resources:

Readings will be recommended throughout the course of the semester. Recommended readings and other multi-media materials will be made available for students through the University of Florida Libraries and the University of Florida CIRCA Architecture Lab (Located on first floor of the Architecture building – ARCH 118).

Recommended References

1. Law, M., & Collins, A. (2013). *Getting to know ArcGIS for desktop*. Redlands, Calif: ESRI Press.
(*UF Library Call number: G70.212 .G489 2013*)
2. Kennedy, M. D. (2013). *Introducing geographic information systems with ArcGIS: A workbook approach to learning GIS* Wiley.
(e-Book can be found at : <http://www.uflib.ufl.edu/>)
3. Kennedy, H. (2010). *Introduction to 3D data: Modeling with ArcGIS 3D analyst and google earth*. Hoboken: Wiley-Blackwell.
(e-Book can be found at : <http://www.uflib.ufl.edu/>)
4. Tal, D. (2009). *Google SketchUp for site design: A guide to modeling site plans, terrain, and architecture*. Hoboken, N.J: John Wiley & Sons.
(*UF Library Call number: SB475.9.D37 T35 2009*)
5. Chopra, A. (2010), *Google SketchUp 8 for dummies*. US: Wiley Pub.
(e-Book can be found at: <http://www.uflib.ufl.edu/>)
6. Carmona, M. (2003). *Public places, urban spaces: The dimensions of urban design*. Oxford: Architectural Press.
(*UF Library Call number: HT166 .P813 2003*)

Web Resources

UF Libraries and Labs (links and web addresses to facilitate your access)

- University of Florida (Library homepage): <http://www.uflib.ufl.edu>
- VPN connection (Off campus access): <https://connect.ufl.edu/it/wiki/Pages/glvpn.aspx>
- Library Tools and Mobile Apps (smart phones, RSS feeds, etc.): <http://www.uflib.ufl.edu/tools>

GIS instruction, GIS data, and Aerial imagery

- ESRI resource center):
<http://resources.arcgis.com/en/help/main/10.1/>
<http://resources.arcgis.com/en/communities/3d/>
<http://video.arcgis.com/>
- Florida Geographic Data Library (FGDL): <http://www.fgdl.org/>
- Land Boundary Information System (LABINS): <http://data.labins.org/2003/>

SketchUp

- SketchUp: <http://www.sketchup.com/>
- SketchUp School (SketchUp resources): <http://www.sketchupschool.com/>
- Google Earth: <http://www.google.com/earth/index.html>

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(Optional) SketchUp specific High-resolution photorealistic rendering

- Podium: <http://www.suplugins.com/>
- Indigo Renderer: <http://www.indigorenderer.com/sketchup>
- LightUp for SketchUp: <http://www.light-up.co.uk/>
- IRender nXt: http://www.renderplus.com/htm/irender_information.htm
- Shaderlight: <http://www.artvps.com/>
- Twilight Render: <http://twilightrender.com/>
- V-Ray (Windows only): http://www.vray.com/vray_for_sketchup/

(Optional) General High-resolution photorealistic modeling and rendering

- Autodesk 3DS Max: <http://www.autodesk.com/products/autodesk-3ds-max/overview>
- Maya: <http://www.autodesk.com/products/autodesk-maya/overview>
- Revit: <http://www.autodesk.com/products/autodesk-revit-family/overview>
- 3DPaintBrush: <http://www.3dpaintbrush.com/>
- Artlantis: <http://www.artlantis.com/>
- Maxwell Render: <http://maxwellrender.com/>
- Kerkythea: <http://www.kerkythea.net/joomla/index.php>

Computer & Software Resources

1. e-Learning

This course will be taught in the classroom. The course will be supplemented with online support provided by e-Learning. The e-Learning system will be used to post all course materials - lectures, assignments, readings, grades, and other materials. The website can be accessed at <http://lss.at.ufl.edu>.

2. Assistance

Help with homework and project assignments will be provided during walk in office hours as well as online. To communicate via audio with the instructor during the online hours students can use computer microphone and speakers or telephone. The use of a headset is recommended for best audio quality.

3. Live web-conferencing

Occasionally the instructor will teach the course remotely via live HD video-conferencing. Student will attend as usual in the classroom.

4. Software Requirements / Recommendations

Students require to have computer. The followings are the required software:

- ArcGIS (Request a Student Copy of ArcGIS Desktop)
http://www.geoplan.ufl.edu/software/student_license.php
- SketchUp Make 2015 (free downloads) at <http://www.sketchup.com/download/all>
- (Recommended image editing program) gimp (free downloads) at <http://www.gimp.org/>

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Tentative Course Schedule:

WEEK	TOPIC	Assignment	
		Assign	Due
1	Fundamentals of 3D modeling		
2	Introduction to GIS 3D Modeling and Visualization		
3	Integration of GIS & non-GIS 3D Modeling & Visualization - Part I	Assignment 1	
4	Advanced Modeling and Model Organization	Assignment 2	Assignment 1
5	Modeling with Textures and Advanced Model Presentation	Assignment 3	Assignment 2
6	Integration of GIS & non-GIS 3D Modeling & Visualization - Part II	Assignment 4	Assignment 3
7	Emerging Technologies – City Engine Assignment about emerging technologies	Assignment 5	Assignment 4
8	Emerging Technologies – City Engine Final Project Assignment	Final Project (part1)	Assignment 5
9	Final Project work & Review (1)	Final Project (part2)	Final Project (part1)
10	Final Project work & Review (2)	Final Project (part3)	Final Project (part2)
11	No class / Homecoming		
12	Final Project work & Review (3)		Final Project (part3)
13	Final Project work & Final Review		Final Project (part4)
14	No class / Thanksgiving		
15	Final Presentation		Final project presentation file
Submit (edited) final project materials on e-Learning (including comments from presentation)			